

Some additional Laboulbeniales (Ascomycetes) new to Poland

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Six fungal species belonging to the order Laboulbeniales new to Poland are described and illustrated: *Dimeromyces corynetis* Thaxter, *Euphoriomyces magnicellulatus* Santamaria, *Laboulbenia cornuta* Thaxter, *L. manubriolata* Thaxter, *L. nana* Sugiyama and *L. olisthopi* Spegazzini. The status of the latter species, also reported from Ukraine, is briefly discussed.

Key words: Laboulbeniales, *Dimeromyces*, *Euphoriomyces*, *Laboulbenia*, Poland, Ukraine

INTRODUCTION

Six species of the order Laboulbeniales new to Poland are described and illustrated. Recorded only recently, they are not listed in the author's previous publications (Majewski 1994, 1999). Two species were collected during field studies (*Laboulbenia cornuta* and *L. manubriolata*). The others were identified on insects in the following entomological collections: private collection of Roman Królik, Kluczbork (*Dimeromyces corynetis*), private collection of Rafał Ruta, Piła (*Euphoriomyces magnicellulatus*), collection of the Museum and Institute of Zoology, Polish Academy of Sciences, Łomna (*Laboulbenia nana*), and the Natural History Museum, Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Kraków (*Laboulbenia olisthopi*).

Additionally, *Laboulbenia elaphricola* J.Siemaszko et W.Siemaszko should also be classified in the mycoflora of Poland. The species was considered to be a synonym of *Laboulbenia elaphri* Spegazzini by the author (Majewski 1994). De Kesel and Krastina-De Kesel (2006), however, have now confirmed specific distinctness of *Laboulbenia elaphricola*. A total of 206 species of the order Laboulbeniales are now known from Poland. They are presented in a forthcoming publication (Majewski ms.) which provides a full list of references and the descriptions of the localities in Poland.

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DESCRIPTIONS OF SPECIES

Dimeromyces corynetis Thaxter

Dimeromyces corynetis Thaxter, Proc. Amer. Acad. Arts 48: 157. 1912 ('*D. Corynetis*').

Female thallus yellowish, 290 μm long. Receptacle 50 μm long (without the foot), consisting of four cells; the basal cell large, elongated, the second one flattened, bearing laterally a short, slender secondary appendage; the third cell isodiametric, bearing laterally the perithecium, and the fourth cell isodiametric, bearing laterally a long, slender, 6-celled secondary appendage. Primary appendage being a continuation of the receptacle axis, unicellular, elongated, as long as the basal cell of the receptacle. Perithecium fusiform, 175 x 45 μm , with indistinct neck, stalk cell 75 μm long. Male thallus not found (Fig. 1a).

On *Necrobia ruficollis* (Fabricius) (Coleoptera, *Cleridae*): Wierzbica Górna, Kluczbork powiat, ex cadaver of *Capreolus capreolus* (L.), leg. Roman Królik, 28.8.1990, TM 10100 (host *ex coll.* R. Królik).

Only one complete thallus was found on the host's elytron. Its features are consistent with the descriptions and figures given by Thaxter (1924) and Santamaria (2003). *Dimeromyces corynetis*, an infrequent species, parasitizes representatives of the genera *Corynetes* and *Necrobia*. It is known from America (Argentina and Hawaii) and from Western Europe, namely from Spain, Great Britain, France, and Italy (Santamaria et al. 1991; Santamaria 2003).

Euphoriomyces magnicellulatus Santamaria

Euphoriomyces magnicellulatus Santamaria, Revista Iberoam. Micol. 8: 48. 1991.

Thallus hyaline, 85-135 μm long. Receptacle consisting of 6-8 superposed cells, 40-63 μm long. The basal cell usually somewhat elongated, the remaining cells rather flattened in the lower part of the receptacle and isodiametric in its upper part. Except the basal one, the receptacle cells cut off bilaterally basal cells of short secondary antheridial blanchlets or stalk cells of perithecia. Primary appendage is a prolongation of the receptacle, not exceeding the perithecial apex. It consists of one or two cells bearing antheridia laterally and distally. Perithecia one or two per thallus, 50-75 x 18-25 μm , elongated, broadest near the middle, with indistinct neck. Fig. 1: b-e.

On *Hydnobius multistriatus* (Gyllenhal) (Coleoptera, *Leiodidae*): Pieskowa Skała, Kraków powiat, 18.8.2001, leg. Rafał Ruta, TM 10512-10514 (host *ex coll.* R. Ruta).

Many thalli were found on the elytra of one insect in an entomological collection. They are mostly consistent with the description given by Santamaria (1991, 2003); however, thalli with two mature or maturing perithecia are frequent.

Euphoriomyces magnicellulatus seems to be a very rare species. It has been reported only from Spain on *Hydnobius spinipes* (Gyllenhal) (type host), *Leiodes* sp. and *Baptolinus affinis* (Paykull), and from the Balearic Islands on *Hydnobius* sp.

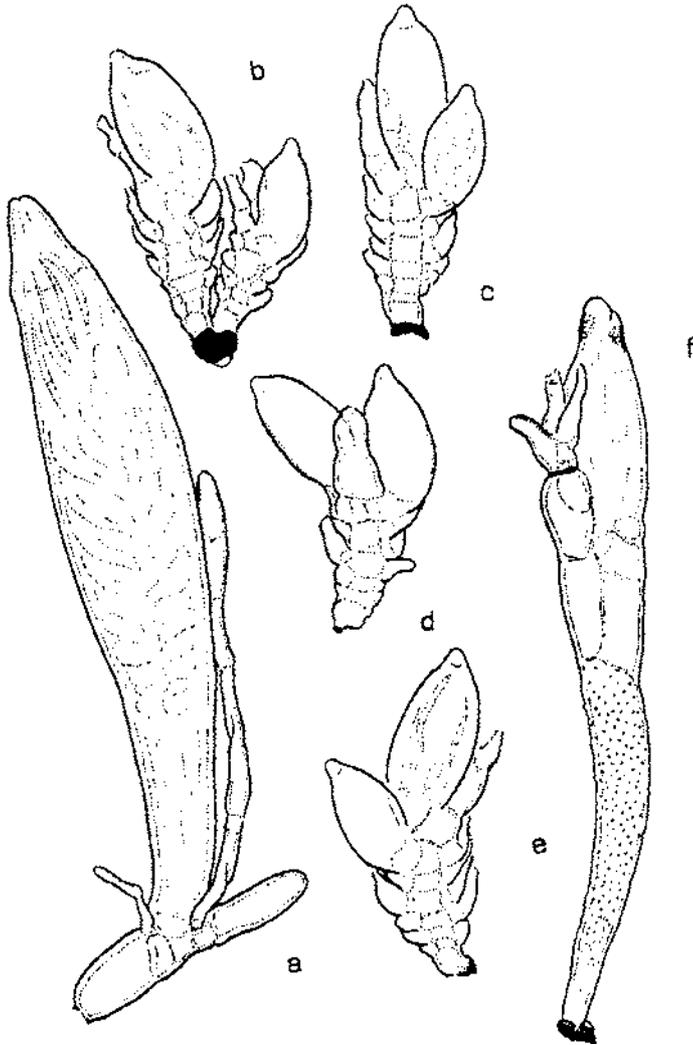


Fig. 1. *Dimeromyces corynetis* Thaxter. a female thallus (drawn from TM. 10100). *Euphoriomyces magnicellulatus* Santamaria. b paired thalli with one perithecium (TM 10513), c e thalli with two perithecia (TM 10514). *Laboulbenia manubriolata* Thaxter. f mature thallus (TM 10161). Scale bar: 100 μ m.

(Santamaria 1991, 2003). The above hosts belong to the family *Leiodidae*. The Polish host, *Hydnobius multistriatus*, is a rare species, and its lifestyle and ecological preferences are not known (Burakowski et al. 1978).

***Laboulbenia cornuta* Thaxter**

Laboulbenia cornuta Thaxter, Proc. Amer. Acad. Arts Sci. 30: 476. 1895.

Thalli similar to those of *Laboulbenia luxurians* (see Majewski 1994). Their particularly characteristic features include flattened cell III situated obliquely, large cell V, and hyaline, short anterior appendage branchlets directed towards the perithecium. *L. cornuta* differs from *L. luxurians* in having larger and almost isodiametric basal cells of appendage as well as a unicellular straight horn on the perithecial apex directed anteriorly. Thalli 192-220 μm long (including horn), receptacle 105-120 μm long, perithecium (without horn) 88-95 x 38-48 μm (Fig. 2 a, b).

On *Bembidion obliquum* (Sturm) (Coleoptera, *Carabidae*, subgenus *Notaphus*): Zielona Góra: Jędrzychów, sand by the water on the bottom of a large sand pit surrounded by a *Pinus sylvestris* L. forest by the S town border, 14.8.2002, leg. T. Majewski, TM 9420.

The thalli of *L. cornuta* discussed here are consistent with Thaxter's description (1895, 1896) and figures given by Thaxter (1896) and Santamaria (2001).

Laboulbenia cornuta is a rare species. It was described from the U.S.A. (Thaxter 1895), and was later reported from Cuba (Balazuc 1977), Hungary (Bánhegyi 1944) and Spain (Santamaria 2001). Hosts are beetles of the genus *Bembidion* sensu lato belonging to the subgenus *Notaphus* Stephens, which is often considered to be a separate genus in the entomological literature.

***Laboulbenia manubriolata* Thaxter**

Laboulbenia manubriolata Thaxter, Proc. Amer. Acad. Arts Sci. 51: 44. 1915.

Thallus yellowish, slender, 245 μm long. Cells I, II, III and IV elongated, cell V half as long as cell IV. Cell wall of cell II and upper half of cell I distinctly tuberculate, somewhat darker than the other part of the thallus. Insertion cell thin, constricted. The outer basal cell of appendage forming blunt outgrowth, appendage branchlets not preserved in the described thallus. Cells VI and VII elongated, perithecium 75 x 28 μm , subfusiform, more than one half free, with indistinct neck. Fig. 1f.

On *Perigona nigriceps* (Dejean) (Coleoptera, *Carabidae*): Branice, Głubczyce powiat, pile of old hay surrounded by nettles (*Urtica dioica* L.) on the border of a meadow and a cluster of trees (*Salix fragilis* L.) near the Opawica river ca. 1 km SWW of the village, 15.7.2004, leg. T. Majewski, TM 10161.

Laboulbenia manubriolata was described by Thaxter (1915) from Java and Ceylon and reported again from China by Rossi (1982), who was the first to provide a picture of it. It was later recorded in a number of countries in eastern Asia (Terada et al. 2004). It seems to occur mostly on *Perigona nigriceps* in Asia. This beetle has also been encountered in Europe, introduced here sporadically with plant material. Its parasite, *L. manubriolata*, has been reported from Portugal (Santamaria 1993), Great Britain (Weir 1996), Finland (Huldén 1983) and Norway (Huldén 1985). *Perigona nigriceps* is found in Poland very rarely (Burakowski et al. 1974 Jałoszyński, Sienkiewicz 2002).

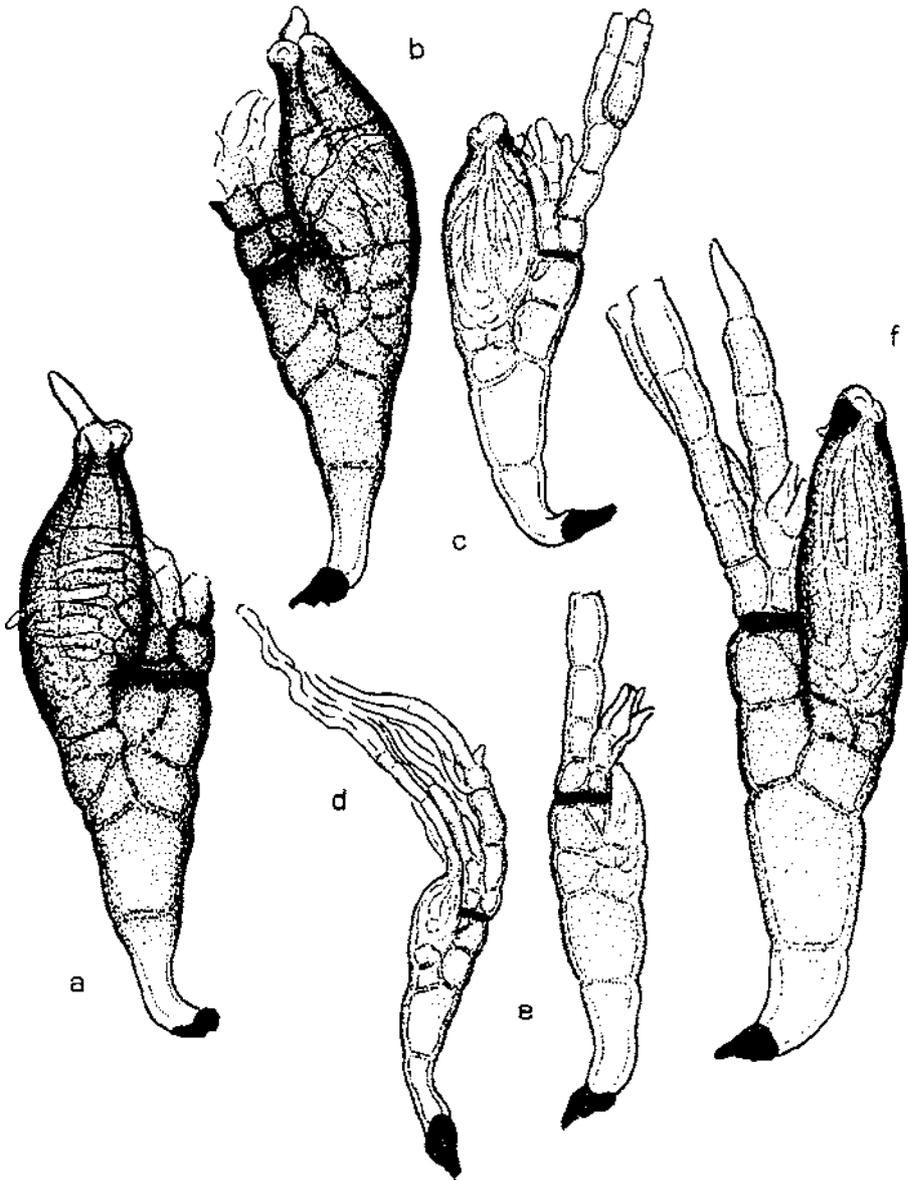


Fig. 2. *Laboulbenia cornuta* Thaxter. a, b mature thalli (drawn from TM 9420). *Laboulbenia nana* Thaxter. c mature thallus (TM 10617), d immature thallus (TM 10618). *Laboulbenia olishopi* Spegazzini. e immature thallus (TM 10099), f mature thallus (TM 10098). Scale bar: 100 μ m.

The features of the only thallus collected in Poland are consistent with the descriptions and figures given by, *inter alia*, Rossi (1982), Santamaria (1993) and Terada (2000).

***Laboulbenia nana* Sugiyama**

Laboulbenia nana Sugiyama, Ginkgoana 2: 54. 1973.

Thallus 150-155 μm long, olive-brownish, perithecial region darkened. Receptacle 78-108 μm long, curved near the base. Cells I and II 2-3 times longer than broad, cells III and IV 1.5 times longer than broad, cell V half as long as cell IV. Insertion cell dark, slightly constricted; outer appendage long, composed of elongated cells, once branched on second (?) or third cell; basal cell of inner appendage only slightly shorter than basal cell of outer appendage, antheridial branchlets not exceeding the perithecium, but some antheridia may proliferate into longer branchlets. Stalk cell of the perithecium oblique, isodiametric or slightly flattened; perithecium ovate, 70-74 x 25-30 μm , about 2/3 free, with apical dark spots and prominent round posterior lips (Fig. 2: c, d.).

On *Tachyta nana* (Gyllenhal) (Coleoptera, *Carabidae*): Rytro, Nowy Sącz powiat, under the bark of *Fagus sylvatica* L., 28.7.1929, *ex coll.* Szymon Tenenbaum, TM 10617, 19618 (host in the Łomna collection).

Laboulbenia nana seems to be a very rare species. It was described from Japan by Sugiyama (1973), later reported only from Spain (Santamaria 1995, 1998); it may also occur in Romania (Santamaria 1998). In Poland, it has been recorded only on two insects in an old entomological collection. Only two mature thalli and two immature thalli growing on the host's elytron and pronotum were recorded. The thalli are not well preserved, especially appendages; they are, however, consistent with the descriptions and figures given in the above studies by Sugiyama and Santamaria. The host is a tiny beetle, fairly often encountered under the bark of dead trees in Poland (Burakowski et al. 1973).

***Laboulbenia olisthopi* Spegazzini**

Laboulbenia olisthopi Spegazzini, Redia 10: 55. 1914 ('*L. olistopi*').

Thallus 190-265 μm long, brownish, perithecial region and upper part of receptacle darkened. Receptacle 140-177 μm long, cell I 1.5 times longer than broad in its distal part, cell II 2 times longer than broad, cells III and IV nearly isodiametric, cell V half as long as cell IV or slightly longer. Insertion cell dark, thick, distinctly constricted; outer appendage long, consisting of elongated cells; basal cell of inner appendage more than half as long as basal cell of the outer one, giving rise to two short antheridial branchlets later proliferating into two strong straight long branches. Basal cell of perithecium oblique, rhomboidal, the perithecium 95-130 x 38-45 μm , in 2/3 free, nearly ovate; apex with prominent posterior lips and distinct subapical black spots (Fig. 2: e, f.).

On *Olisthopus sturmii* (Duftschmid) (Coleoptera, *Carabidae*): vicinity of Przemyśl, *leg.* Tadeusz Trella, no date [before 1940], TM 10099. Additional material from Ukraine: on *O. sturmii*, Chliwiska, Sniatyn powiat, 6.10.1886, *leg.* Stanisław Stobiecki, TM 10098 (both hosts in the Kraków collection).

The described material comprises 3 immature thalli recovered from the host's elytron in Poland as well as 6 mature thalli and 3 immature thalli growing on a beetle collected in western Ukraine. The determination of the thalli is provisional.

Laboulbenia olisthopi has been collected across Europe (Spain, France, Germany, Italy, Switzerland, Madeira); only three authors, however, described and illustrated it. The first, Spegazzini (1914), gives a brief description and somewhat blurred photographs of an immature thallus and three mature thalli, strongly darkened. It seems that cell V is triangular in these thalli, smaller than cell IV and probably is not connected with septum III/IV. Spegazzini's specimens were collected in Italy on *Olisthopus rotundatus* (Paykull) and in Germany (Saxonia) on *O. sturmii*. Balazuc (1975) lists all species of the genus *Laboulbenia* recorded on beetles of the genus *Olisthopus* Dejean (*Odontonyx* Stephens) up to the time of his study: *Laboulbenia polyphaga* Th., *Laboulbenia olisthopi* Speg. and *Laboulbenia flagellata* Peyr. He identifies *Olisthopus sturmii* as the type host of the species described by Spegazzini, and describes and illustrates the thalli of *Laboulbenia olisthopi* found in France on *Odontonyx rotundatus* (*Olisthopus rotundatus*) and Madeira on *O. fuscatus* Dejean. Cell V in these specimens is nearly as large as cell IV and is distinctly connected with septum between cells III and IV.

Santamaria (1989) describes thalli from Spain on *Olisthopus fuscatus* Dejean. Their cells IV and V are subequal, as in Balazuc's thalli. Similar findings are provided in Santamaria's successive study (1998): the description and figures show cell V to be as long as cell IV. Santamaria concludes that septum IV/V connected with septum III/IV is an essential character to separate *L. olisthopi* and forms surrounding *L. polyphaga* Thaxter.

Undoubtedly, the Polish (and Ukrainian) thalli collected on *Olisthopus sturmii* and described here belong to a species different from the thalli discussed by Balazuc and Santamaria, and are likely to be closer to Spegazzini's species. Additionally, the host of the present material, *Olisthopus sturmii*, is the same host as the one recognised as the type host of *L. olisthopi*, and the collection site of the type specimen (Saxony) is located near Poland. „*L. olisthopi*” thalli visible in the pictures given by Balazuc and Santamaria come from different hosts and areas situated further away from the present sites. It should be noticed that the thalli determined here as *L. olisthopi* differ significantly from the thalli of *Laboulbenia polyphaga* recorded in Poland (Majewski 1994) in being clearly darker, and the outer branch of their appendage is not forked.

The Polish host, *Olisthopus sturmii*, is a xerothermic species, found rarely in the south of Poland (Burakowski et al. 1974).

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Nowe dla Polski gatunki Laboulbeniales (Ascomycetes)

Streszczenie

Praca zawiera opisy i ryciny sześciu nowych dla Polski gatunków grzybów z rzędu Laboulbeniales: *Dimeromyces corynetis* Thaxter, *Euphoriomyces magnicellulatus* Santamaria, *Laboulbenia cornuta* Thaxter, *L. manubriolata* Thaxter, *L. nana* Sugiyama i *L. olisthopi* Spegazzini. Ostatni z nich wykazany został także z Ukrainy; dyskutowany jest jego status.